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Case report study about angel's trumpet poisoning in Tikrit city/Iraq

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ABSTRACT

Background: Angel's trumpet plant is available and distributed widely and cultivated as garden plant due to its beauty and less maintenance needs. However it's not well known by general population that Angel's trumpet is poisonous, hence poisoning by Angel's trumpet ingestion is not uncommon.

Aim: The study aimed to identify patient's presentation with Angel's trumpet poisoning

Patient and Methods: The current study is case report study which includes a 6 years old male from Alalam district in Tikrit city presented to Salahuldin general hospital /emergency department with anticholinergic toxicity due to ingestion of angel's trumpet plant. Detailed history, clinical examinations, and full accessible investigations were done. Hematological investigations) complete blood count), biochemical investigations (renal function test, liver function test, random blood sugar) and ECG. Supportive treatment as well as neostigmine was administered.

Results: Angel's trumpet poisoning case with anticholinergic toxicity symptoms and signs. After hard work up and close monitoring was completely recovered without any residual effects.

Conclusion: Angel's trumpet poisoning case of 6 years old male presented with anticholinergic signs and symptoms (loss of consciousness, dry mucous membranes, fever, tachycardia, muscle weakness and mydriasis .With close observation and supportive treatment beside neostigmine as an alternative antidote the patient respond well and discharged home without any residual effects.

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Introduction:

Angel's trumpet poisoning: Angel's trumpet flowers (Fig 1) emit a subtly sweet fragrance at night with their pendulous, trumpet shaped flowers this belies beyond their extreme toxicity of their flowers, seeds, and leaves which can cause serious illness and death if consumed. They should be wisely positioned to prevent interaction with animals and humans. Angel's trumpet has been used in the past centuries to sedate sacrificial victims for spiritual ceremonies and anesthetic agent for external use[1]

The plant Angel's trumpet contains highly poisonous substance called scopolamine and even if tiny amount of it was ingested, is said to produce a ‘zombie’ effect rendering the afflicted completely docile and unable to retain memories .On the other hand in larger quantities it can induce intense hallucinations and even prove fatal. [2]

There have been reported cases of intentional ingestion of Angel's trumpet species by adolescents for recreational purposes due to its hallucinogenic and euphoric effect. [1]

In a previous study in one year alone in the state of Florida ,USA, 85 [1]cases of intentional ingestion of Angel's trumpet were reported

In America, Angel's trumpet was not among the 15 most common plant ingestions, but was responsible for 20% of the fatal outcomes in a 26-year period. In Asia, the anticholinergic toxidrome, related to Angel's trumpet was among the most frequent plant-related intoxications, which included accidental ingestion, improper use of herbal medicines and plant abuse.In Europe Angel's trumpet was among the top four plant taxa causing intoxications with major outcomes, being the leading plants ingested for their hallucinogenic properties, and accounted for 60% of abuse cases in Hungary in a 13-year period. Use of Angel's trumpet for criminal purposes has been reported from America, Asia and Europe.[3]

In herbal medicine,the anticholinergic agents are used in many countries for example Chinese herbal medicine called "yangjinghua" to treat bronchitis,asthma,and flu

symptoms.also in India Ayurvedic medicine,is used to treat various health issues like wounds,asthma,and gout.in addition to this “kecubung” (Datura) in Malaysia is eaten as a traditional medicine to treat allergic rhinitis. In Africa, frequently used in traditional medicine, mainly to relieve asthma and to reduce pain . Inaccurate doses, improper use of traditional herbal medicines or contamination with atropine-like substances may lead to severe or even fatal anticholinergic toxicity.[3]

Poisonous parts: Every part of angel trumpet is highly poisonous, including their leaves, seeds, roots, and flowers. All contain the toxic alkaloid scopolamine, atropine and hyoscyamine. Although every part of the plant is dangerous the oblong ,fruitlike seed pods (the part that was ingested by our case)and colorful flowers pose the greatest risk in home landscaping because they are visually appealing to curious children and because they contain the highest concentration of toxic compound[4] Each blossom contains 0.65 mg scopolamine and about 0.3 ng atropine .Fatalities have been reported at atropine dose of 10 mg this means ingestion of as few as 10 flowers can be not only toxic but fatal . [1] The concentrations of tropane alkaloids vary with the species, seasons and plant parts [2]

Poisonous symptoms: Symptoms appearing when plant residue from angel trumpet enters the blood stream or gastrointestinal tract weather by accidental ingestion or absorption through the mucus membranes .one common and insidious mean of poisoning occurs when a gardener with contaminated hands rub his eyes or consume food which lead to rapid onset of symptoms which include: Muscle weakness, dilated pupils, dry mouth, rapid pulse, fever and hallucinations. Paralysis and convulsion can also occur as well as death [4]

Investigations: Hematological (complete blood count), Biochemical tests (Renal function test, Liver function test, blood sugar levels, and serum electrolytes). Urine for any insult of

drug poisoning and ECG. Those are . the routine investigations that done[4]

Treatment: First aids include:

1.Confirm that the airways are protected; also, ensure breathing and the presence of pulse.

2. Unless instructed by a healthcare professional, DO NOT induces vomiting in the affected individual.

3. Clean the mouth to remove any remaining pieces; wipe mouth with a wet cloth. 4.Take individual to emergency room (ER) for further treatment

5.Always try to take the plant or plant product to the ER. **[5]**

The emergency room steps towards treating the condition:

1-Provide breathing support, if necessary

2-Gastric lavage.

3-Medically manage symptoms, such as abnormal heart rate and seizures.

4-Administer activated charcoal to avoid absorbance of the substance in the body.

5-Administer laxatives for elimination of the substance from the body.

6-Administer fluids by an intravenous drip line.

7-Physostigmine as a cholinergic drug may be used to counter the effects of the tropane alkaloids if necessary[6].

Figure (1) Angel's trumpet. The first picture was the part that the child had been ingested.

Prognosis and fate: The prognosis of Angel's trumpet poisoning is dependent on the amount of substance consumed, part of the plant, time between consumption and treatment, severity of the symptoms, as well as general health status of the patient. If the individual can recover from the symptoms that occur due to mild poisoning, the outcome is generally good, with appropriate medication and early support. In most cases, the affected individuals are known to fully recover within 3 days. In case of severe symptoms due to severe contact/poisoning; it may worsen the outcome and/or prolong time of recovery. Nevertheless, deaths from Angel's trumpet poisoning are rarely reported. [6]

Aim of the study:

Identification of patient's presentation with Angel's trumpt poisoning

Objectives:

1. Identify the demographic characteristics of patient with Angel's trumpet poisoning

2. Describe the presentation (clinical, biochemical and other investigations) of patient with angel's trumpet poisoning.

3. Clarify the fate of patient with Angel's trumpet poisoning

Patient and methods:

The current study is case report study which includes a 6 years old male from Alalam district in Tikrit city presented to Salahuldin general hospital /emergency department with signs and symptoms that all indicate underlying poisonous issue. Detailed history was taken. The family reported ingestion of aAngel's trumpet seeds which was confirmed by photos taken by their own mobile camera.

On examination patient had loss of consciousness, tachycardia 160b/m, respiratory rate 40 c/m, Spo2 97% ON ROOM AIR, Temperature 37.7 C (thermometer at axilla), dry mouth, muscle weakness and midryasis. After estimation of Glasco Coma Scale it was 9, E1V3M5. Full possible investigations were also done: (RBS 186 mg/dl ,blood urea17.9 mg/dl , S.creatinine 1.1 mg/dl , SGOT 25 U/L, SGPT 18 U/L, ALP 7 U/L, PCV 38%, WBC 9.1 ×10^9/L) all within normal range, ECG revealed sinus tachycardia Figure (2).

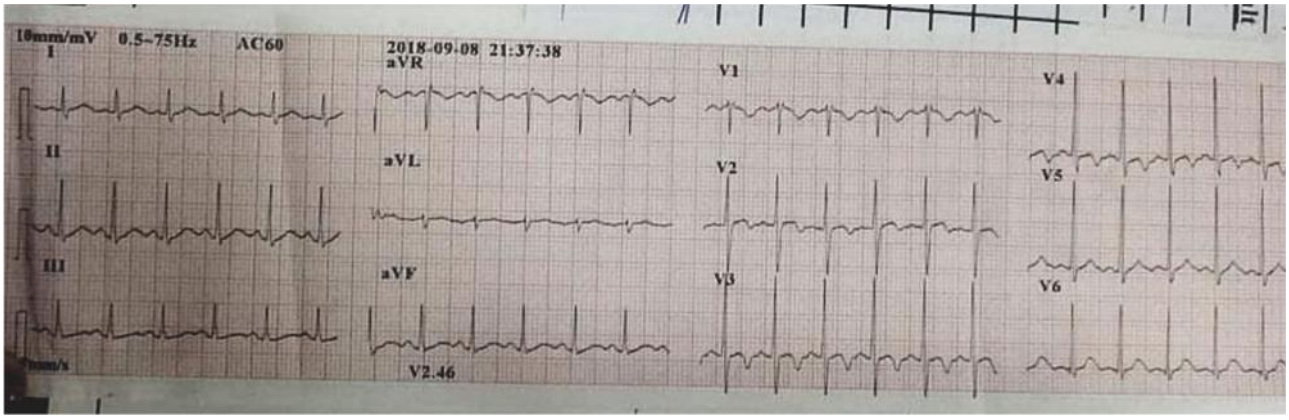

Figure (2) ECG well standardized, sinus, regular with heart rate 150 beat per minute .Features of sinus tachycardia.

While the doctors seeking the cause of patient's condition, Primary and secondary survey with supportive treatment done. Treatment includes 2 IV lines and Foley's catheter was inserted (Urine Out Put 50 ml, clear, yellow) and he was well hydrated with normal saline to avoid any burden of

rhabdomyolysis that may occur due toxic alkaloid and causes acute kidney injury.

Since he presented more than 6 hours after the presumed poisoning of unknown toxin gastric lavage was not done. Soon after confirming the diagnosis, Neostigmine was administered; honestly the antidote of choice is physostigmine which works centrally and cross the blood brain barrier but was not available in the hospital neither the whole governorate. Atropine /neostigmine was stand by for any event of bradycardia as well as diazepam for any event of convulsion

The results:

The current patient was from a rural area Alalam district in Tikrit city, Salahuldin governorate in Iraq, were different types of plants are widely distributed whether they were naturally plants or cultivated. The work up in emergency unit was with close observation as the results are explained below.

Time	GCS
Upon admission **10:00 p.m.**	7 E1V1M5
10:30 p.m.	7 E1V1M5
11:00 p.m.	11 E4V1M6
11:30 p.m.	12 E4V2M6
12:00 a.m.	12 E4V2M6

Table 1: estimation of GCS= Glasgow coma scale during emergency room care.

Time	Pupils' status
Upon admission 10:00 p.m.	Dilated pupils poorly reacted to light (mydriasis)
10:30 p.m.	Dilated pupils very slowly reacting to light
11:00 p.m.	Dilated more faster reacting to light
11:30 p.m.	Less dilated reacting to light
12:00 a.m.	Less dilated reacting to light

Table 2: estimation of pupils' status during emergency room care.

Time	RR	SPO2	HR b/m	Temperature c°
Upon admission 10:00 p.m.	42	97% on room air	160	37.7
10:30 p.m.	23	97% on room air	150	37.7
11:00 p.m.	18	99% on room air	90	36.6
11:30 p.m.	20	99% on room air	77	37
12:00 a.m.	18	99% on room air	76	36.9

Table 3: estimation of vital signs during emergency room care.

RR=respiratory rate, SPO2=oxygen saturation ,HR= heart rate.

Time	Mucus membranes
Upon admission 10:00 p.m.	**Dry**
10:30 p.m.	**Dry**
11:00 p.m.	**Extensive salivation**
11:30 p.m.	**Hydrated**
12:00 a.m.	**Hydrated**

Table 4 : estimation of hydration status during emergency room care.

Time	Muscle weakness
Upon admission 10:00 p.m.	No muscle movement
10:30 p.m.	Moves with gravity eliminated
11:00 p.m.	Against gravity and resistance
11:30 p.m.	Against gravity and resistance
12:00 a.m.	Against gravity and résistance

Table 5 : estimation of muscle weakness during emergency room care.

Time	Input	Output
Upon admission 10:00 p.m.	Normal saline 500 ML	No
10:30 p.m.	Neostigmine Bolus dose	50 ml Clear ,yellow
11:00 p.m.	Neostigmine maintenance dose	100 ml Clear ,yellow
11:30 p.m.	Glucose saline 500 ml	100 ml Clear ,yellow
12:00 a.m.		150 ml Clear ,yellow

Table 6: estimation of input and output during emergency room care.

Time	GCS	RR	SPO2	HR	Temperature	Mucous membranes	Mydriasis	Muscle weakness	input	output
On admission 10:00 p.m.	7 E1V1 M5	42	97% On room air	160	37.7 C	dry	Dilated pupils poorly reacted to light	No muscle movement	Normal saline 500 ML	no
10:30 p.m.	7 E1V1 M5	23	97% on room air	150	37.7 C	dry	Dilated pupils very slowly reacting to light	Moves with gravity eliminate	Neostigmine Bolus dose	50 ml Clear ,yellow
11:00 p.m.	11 E4V1 M6	18	99% on room air	90	36.6 C	Excessive salivation	Dilated more faster reacting to light	Against gravity and resistance	Neostigmine maintenance dose	100 ml Clear ,yellow
11:30 p.m.	12 E4V2 M6	20	99% on room air	77	37 C	Hydrated	Less dilated reacting to light	Against gravity and resistance	Glucose saline 500 ml	100 ml Clear ,yellow
12:00 a.m.	12 E4V2 M6	18	99% on room air	76	36.9 C	hydrated	Less dilated reacting to light	Against gravity and résistance		150 ml Clear ,yellow

Table 7: (All in one) The work up during the two hours emergency room care

After stabilization of the patient in emergency room, the patient was conscious, still not oriented, not tachypnic, not dyspnic , normal heart rate and temperature, fully saturated of oxygen was noted, improving of mydriasis, flowing of urine output, removing of excessive salivation with sucker device , and improving of muscle power ,and no any attack of convulsion.

The patient was admitted to pediatric ward for further follow up and close monitoring. A 24 hour observation for patient's status was done. He was discharged home with GCS 15/15, he completely recovered without any residual effect.

Discussion

The current study is a case report of a 6 year old boy presented to emergency department of Salahuldin general

hospital in Tikrit city, with unknowing ingestion of Angel's trumpet seeds with signs and symptoms of anticholinergic toxicity. This beautiful easily cultative plant is attractive to children and adolescents beside not well known by general population how toxic this plant is! . The family reported that their child used to carry the flowers, smell it and told about its sweet fragrance which was admiring him ,but no one took this seriously. Similar reported cases were found in national hospital of Sri Lanka and Australia. [1]

Another case was reported in Korea after being a victim of Angel's trumpet poisoning because Angel's trumpet was ingested as an ingredient of a traditional Korean dish.[7]

This 6 years old boy presented with the following main signs and symptoms :loss of consciousness, mydriasis, tachycardia, and fever. According to a study carried in Sri Lanka among children with Angel's trumpet poisoning, hyperpyrexia, mydriasis and tachycardia to occur 100% of cases [1]. Respiratory failure and cardiovascular collapse have been reported in severe cases. [1]

Children have higher worse effects with smaller amounts of toxin Another study in Australia refers to signs and symptoms in adults, that mydriasis to occur in 100% of cased, delirium appears in 88% of cases, and tachycardia in 33% of cases.A case has been reported as toxic psychosis caused by Angel's trumpet poisoning[8]Other anticholinergic toxicity signs and symptoms which appeared in our case is: muscle weakness and dry mucus membranes. Those symptoms mentioned to occur by Taiwan poisoning center.[6]

Urine retention and bladder distention on another hand occurs as part of anticholinergic toxicity symptoms as mentioned in a case report in India [9], thus as apart of management Foley's catheterization was done to this patient. Supportive treatment with close monitoring for the patient was done as a good step to be taken during early recognition of poisoning case.

Good hydration with normal saline was done in order to prevent acute kidney

injury due to rhabdomyolysis that can occur due to the effect of alkaloid that presents in Angel's trumpet. [10]

Since he presented more than 6 hours after the presumed poisoning of unknown toxin gastric lavage was not done. [1]

As further specific treatment, Physostigmine is the antidote of choice since it can cross the blood brain barrier and works both peripheral and central as cholinestrase inhibitor and recommend in patients who show both peripheral and moderate to sever central signs and symptoms while other carbamates like neostigmine can only deal with peripheral ones since they can not cross the blood brain barrier[11],however physostigmine usage is controversial despite recent reports of its safe use.it is used in severe cases. [1] Excessive dosing with an antidote can in some instances be more harmful than the expected effects of the toxicant itself,for example physostigmine if given in excessive dose to patients with mild to moderate anticholinergic toxicity can cause fatal bradycardia.[11]

This medication was not available at time thus an alternative drug called neostigmine was used with good results as the vital signs became more stable and regaining of consciousness occurred within 1 hour.

Diazepam was stand by for any onset of convulsion, fortunately no attacks of convulsion occurred in this patient .The fate of patient was a full recovery without any residual effects within 24 hour .[1]

Plant is available and distributed widely and cultivated as garden plant due to its beauty and less maintenance needs. However it's not well known by general population that Angel's trumpet is poisonous, hence poisoning by Angel's trumpet ingestion is not uncommon [8] but there were limited published studies regarding this subject. The number of registered cases seems to be very low compared with the size of population in the world ,and this most probably due to underreporting[3]

Conclusion:

Patient with Angel's trumpet poisoning presented with loss of consciousness,

dry mucous membranes, fever, tachycardia, muscle weakness and mydriasis . Supportive treatment beside neostigmine as an alternative antidote were effective in this case.

Recommendations

1-Raise the awareness of parents and society about poisoning issues.

2-Activation of biologists' role and toxicity experts.

3-Establishment of toxicity center in the governorate

4.-Working on making toxicity screening test available in the hospitals.

5-working hardly to ensure that antidotes are available

6-Doctors should raise their index of suspicion upon dealing with such cases that may be Angel's trumpet poisoning.

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